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ONTARIO DEPARTMENT OF AGRICULTURE.

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REMEDIES FOR THE PREVENTION OF SMUT.

PROF. J. H. PANTON, ONTARIO AGRICULTURAL COLLEGE, GUELPH.

Clean Seed. If there are no smut spores upon the grain sown, there will be no smut upon the plants that grow from it.

Hot Water. It has been conclusively shown that smut spores upon wheat or oats can be destroyed by immersing the grain for fifteen minutes in water at a temperature of 132°F. This not only destroys the smut spores, but hastens the germination of the grain and improves the general growth of the plants. The difficulty in this treatment is to maintain a temperature of 132°, for if it falls below 130° or rises beyond 135°, the remedy is likely to fail.

Any way by which this temperature of 132°F can be kept up and the grain immersed in it twelve to fifteen minutes may be adopted. Some persons take two vessels, one containing water at 110°F to 120°F, the other water at 132°F. Whatever quantity of grain is taken each time for treatment, it should be much less in bulk than the water into which it is to be immersed. The grain is put into a basket or bag made from loosely woven material, so as to permit the water to pass in and out readily without the grain straining through.

The grain is first put into No. 1 a minute or two, raised up and down a few times so that it may be thoroughly wet, and heated so as not to lessen the temperature of No. 2, into which it is next plunged and moved about for twelve to fifteen minutes, so as to be thoroughly saturated. It is very important to keep the temperature of the water in this vessel at 132° ; if it sinks below add warm water and if it rises above add cold water, never allowing it to reach higher than 135° or lower than 130°. The grain, after having been raised and lowered into No. 2 several times for twelve to fifteen minutes, is lifted out and cooled, either by dipping it into cold water or by pouring cold water upon it.

Considerable smut may be removed before treating with hot water, by placing the grain in a vessel of cold water and stirring it about for 30 minutes. The smutty grains will float to the top and may be skimmed off.

Chemical Solutions. In treatment by using solutions of chemical compounds, there is always a risk of injuring the germinating power of the grain.

But this method has been long followed with much success, usually more in the case of wheat smut (bunt) than that upon oats (loose smut).

In both cases the *hot water* remedy ranks the most successful. There are many solutions that have been tried, but we shall refer to only two. It is generally believed that a strong solution used for a short time is better than a weak one for a longer period, especially where the seed is to be sown by a seed-drill. When grain is allowed to soak for a long time, it does not readily pass out of the drill, and hence using a stronger solution for a shorter time is preferred.

The following are among the best solutions that have been tried:

1. One lb. *Copper Sulphate* (blue vitriol) dissolved in 3 gals. water. Wet the grain thoroughly with this solution and then dry it gradually or sprinkle slaked lime upon it.
2. Three lb. of *Copper Sulphate* dissolved in 5 gals. water. Wet the grain thoroughly and dry by sprinkling plaster or slaked lime upon it and mix well. This quantity will be about sufficient for 15 bushels of grain.
3. One lb. *Copper Sulphate* dissolved in 20 gals water. Allow the seed to remain in this 12 to 15 hours and put it in lime water for ten minutes and then dry.
4. One lb. *Potassium Sulphide* (liver of sulphur) dissolved in 10 gals. water. Allow the grain to steep in this 12 hours, stirring it from time to time so as to thoroughly mix; then spread the grain so as to dry.
5. One lb. *Potassium Sulphide* dissolved in 20 gals. water. Steep the grain in this 24 hours.